

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-60. (Cancelled)

61. (New) A method for seamless handover of mobile devices in heterogeneous networks in which method a mobile device or the mobile network to which it belongs is moved between different topological network locations and transmits and/or receives data by means of one or more network access technologies without the data transfer between at least one OSI Layer 7 Client IP application, running on the mobile device, and at least one OSI Layer 7 Server IP application, running on an Internet server, being interrupted, the method comprising the steps of:

requesting, by the at least one Client IP application, the sending of one or more first data units to an OSI Layer 7 client-service module, the one or more first data units containing a client payload and a first set of headers and/or footers for each OSI Layer traversed to reach the client-service module;

creating, by the client-service module, one or more second data units and sends it or them to at least one OSI Layer 7 server-service module, the one or more second data units containing the client payload and a second set of headers and/or footers for each OSI Layer traversed to reach the at least one server-service module; and

creating, by the at least one server-service module, one or more third data units and sends it or them to the at least one Server IP application, the one or more third data units containing the client payload and a third set of headers and/or footers for each OSI Layer traversed to reach the at least one Server IP application.

62. (New) The method according to claim 61, wherein

the at least one Server IP application makes a reply sending one or more fourth data units to the server-service module, the one or more fourth data units containing a server payload and a fourth set of headers and/or footers for each OSI Layer traversed to reach the server-service module,

the server-service module creates one or more fifth data units and sends it or them to the client-service module, the one or more fifth data units containing the server payload and a fifth set of headers and/or footers for each OSI Layer traversed to reach the client-service module, and

the client-service module creates one or more sixth data units and sends it or them to the at least one Client IP application, the sixth data units containing the server payload and a sixth set of headers and/or footers for each OSI Layer traversed to reach the at least one Client IP application.

63. (New) The method according to claim 61, wherein
with a sudden or planned change or update of a physical network interface currently used by the client-service module that causes a modification of the IP address currently used to exchange data with the at least one server-service module, the data transfer between the at least one Client IP application and the at least one Server IP application is suspended but kept up, in order to provide the seamless handover,

the client-service module and the at least one server-service module realize the suspension of the data transfer between the at least one Client IP application and the at least one Server IP application by stopping to forward the data units received by them, and

the data transfer between the at least one Client IP application and the at least one Server IP application is resumed when the client-service module has obtained a new IP address and has completed with the at least one server-service module the handshaking for the switching procedure from the old IP address to the new one.

64. (New) The method according to claim 63, wherein source codes of the at least one Client IP application and of the at least one Server IP application remains unmodified.

65. (New) The method according to claim 61, wherein the client-service module is installed on any additional mobile device on the same local or personal area network as the mobile device running the at least one Client IP application.

66. (New) The method according to claim 61, wherein the at least one server-service module is installed on an additional Internet server different from the Internet server running the at least one Server IP application.

67. (New) The method according to claim 61, wherein

the client-service module periodically checks the mobile device, in which it is installed, for available and configurable physical network interfaces that can be used to access the at least one server-service module and creates a lookup table with the available and configurable ones, and

the client-service module automatically or manually changes and updates the physical network interface currently used to access the at least one server-service module on the basis of information retrieved from the lookup table.

68. (New) The method according to claim 61, wherein

the at least one Client IP application exchanges data with the client-service module by means of a connection-oriented or connectionless first socket,

the client-service module exchanges data with the at least one server-service module by means of a connection-oriented or connectionless second socket, and

the at least one server-service module exchanges data with the at least one Server IP application by means of a connection-oriented or connectionless third socket.

69. (New) The method according to claim 61, wherein a plurality of Client IP applications resident on one or more mobile devices is connected simultaneously to the same client-service module.

70. (New) The method according to claim 61, wherein a plurality of Server IP applications resident on one or more Internet servers is connected simultaneously to the same server-service module.

71. (New) The method according to claim 61, wherein the client-service module is connected simultaneously to a plurality of server-service modules.

72. (New) A system for seamless handover of mobile devices in heterogeneous networks, in which a mobile device or the mobile network to which it belongs is moved between different topological network locations and transmits and/or receives data by means of different network access technologies without the data transfer between at least one OSI Layer 7 Client IP application, running on the mobile device, and at least OSI Layer 7 Server IP application, running on an Internet server, being interrupted, wherein

an OSI Layer 7 client-service module comprise means for communicating with the at least one Client IP application and with at least one OSI Layer 7 server-service module,

the at least one server-service module comprise means for communicating with the at least one Server IP application and with the client-service module,

the client-service module comprises means to create one or more second data units and to send it or them to the at least one server-service module, the one or more second data units containing a client payload, received with one or more first data units from the at least one Client IP application, and a second set of headers and/or footers for each OSI Layer traversed to reach the at least one server-service module, and

the at least one server-service module comprises means to create one or more third data units and to send it or them to the at least one Server IP application, the one or more third data units containing the client payload, received in one or more second data units from the client-service module, and a third set of headers and/or footers for each OSI Layer traversed to reach the at least one Server IP application.

73. (New) The system according to claim 72, wherein

the at least one server-service module comprises means to create one or more fifth data units and to send it or them to the client-service module, the one or more fifth data units containing a server payload, received with one or more fourth data units from the at least one Server IP application, and a fifth set of headers and/or footers for each OSI Layer traversed to reach the client-service module, and

the client-service module comprises means to create one or more sixth data units and to send it or them to the at least one Client IP application, the one or more sixth data units containing the server payload, received in one or more fifth data units from the at least one server-service module, and a sixth set of headers and/or footers for each OSI Layer traversed to reach the at least one Client IP application.

74. (New) The system according to claim 72, wherein

the client-service module comprises means to detect or to plan a change or an update of a physical network interface currently used by it that causes a modification of the IP address currently used to exchange data with the at least one server-service module,

the client-service module comprises means to suspend but keep up the data transfer from/to the at least one Client IP application, in order to provide the seamless handover, by stopping to forward the data units received by it,

the at least one server-service module comprises means to suspend but keep up the data transfer from/to the at least one Server IP application, in order to provide the seamless handover in case the client-service module changes its current IP address, by stopping to forward the data units received by it, and

the client-service module and the at least one server-service module comprise means to resume the data transfer between the at least one Client IP application and the at least one Server IP application when the client-service module has obtained a new IP address and has completed with the at least one server-service module the handshaking for the switching procedure from the old IP address to the new one.

75. (New) The system according to claim 72, wherein

the client-service module comprises means to periodically checks the mobile device, in which it is installed, for available and configurable physical network interfaces that can be used to access the at least one server-service module and to creates a lookup table with the available and configurable ones, and

the client-service module comprises means to automatically or manually changes and updates the physical network interface currently used to access the at least one server-service module on the basis of information retrieved from the lookup table.

76. (New) The system according to claim 72, wherein the client-service module is installed on any additional mobile device on the same local or personal area network as the mobile device running the at least one Client IP application.

77. (New) The system according to claim 72, wherein the at least one server-service module is installed on an additional Internet server different from the Internet server running the at least one Server IP application.

78. (New) A computer program product comprising a computer-readable medium with computer program code means contained therein for control of one or more processors of a computer-based system for seamless handover of mobile devices in heterogeneous networks,

wherein the computer program code implements a client-service module and/or a server-service module according to claim 61.